Eye-tracking study of an online shop environment

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5.5 Eye-tracking study of an online shop environment

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Abstract
Prof. Gitte Lindgaard, from the University of Carleton, Canada, says that viewing only some milliseconds of the first page of a website defines our general opinion about it [1]. For an online-shop, it would therefore be essential to have a first page that is not only pleasing to the eye, but also understandable enough to not loose the attention of the user. More and more companies are nowadays using the Internet not only as a showcase anymore, but as a full-strength selling tool, needing thus to convince their users and clients at first glance.

This paper shows the analysis of two online-shops in the magazines' field thanks to eye-tracking. With the analysis of the testers' glances and their comments during and after the test, the usability of these two websites has been evaluated.

Introduction
It is common in usability studies to use the eye-tracking tool. Actually, this device allows the analyst to follow exactly the gazes of the testers and indicates him for example the first point that was looked at or the time spent staring at one particular point. For the testing of a website particularly, the system permits the testing of the layout, of the navigation or of the graphical elements.

Abb. 5.5-1: *Scan path of one of the testers*

The used device for this study was composed of a laptop (to collect the information), as well as a screen linked to a treatment unit, itself being linked to the laptop. The infrared device allowing the tracing of the eye movement is placed just under the tester's screen. The infrared signal is being sent to the tester's eyes and its reflection by the eyes' cornea is transmitted to the treatment unit that is recording and displaying it on the analyst's computer. This signal is of course without any danger for the eyes of the tester.

Before the testing of the websites, a calibration has to be done, that's to say, the tester's eyes have to be recognized by the system. This is done by taking the right position in front of the screen and staring at a point on the display that is going to move in the main directions.

For the analyst, two types of information must be considered: the fixations and the saccades. The fixations are the points which the user stared at. They are represented on the analyst's display as circles of different diameters. The larger the diameter of the point is, the longer this one has been stared. The saccades are the movement between two fixations, represented by a line linking those. Fixations and saccades are representing the so called "scan path", Figure 5.5-1. This numbered path allows the analyst to follow the stares of the tester, their sequence and the length of focus in milliseconds on each of them. Thanks to this path, it is possible to see which part of the website is considered, which content is stared at the longest and in which order. This will help the analyst to find usability problems or to confirm a design decision.

Preparation and realisation of the test
The material preparation phase was very short. Indeed, thanks to the available high technology material, the adjustment was resumed to the good positioning of chair and screen of the tester.

While the calibration of the system was done with the testers, it could be examined that when a tester was blinking too long or when his or her eyes were leaving the screen, the calibration was stopping. Not only was the patience of the users needed, but it was also leading to little determining errors in the calibration.

To realise an experiment as efficient as possible, an aim public had to be defined.

For time and organisational reasons, the number of testers had to be limited to 12. Thanks to marketing reports from both media companies editing the tested magazines, an aim public could be defined as follows:

- Most of the readers of these magazines are over 50 years old
- The readers are mostly working or retired
- The majority of the readers are men
- The readers are German-speakers

Therefore, 8 men and 4 women were asked, 6 of them being over 50, 3 between 40 and 49, 2 between 30 and 39 and 1 between 20 and 29 years old.

As no indications about the level of computer knowledge of the aim group have been found, testers with, as well as without computer skills have been chosen. All of the testers were German-speakers.

A test plan, identical for all the testers, has been created and used for an efficient completion of the test. This test plan was composed of 3 tasks that the user had to accomplish and was followed by a questionnaire. The testers were advised to speak out on the problems of understanding or on the difficulties to achieve a task for example. Following tasks had to be completed on both online-shops:

1. Orientate yourself on the website until you have the feeling to have an impression of the website.
2. Try to gift a subscription to one of your friend
3. You want to change your delivery address, how would you do that?

These 3 tasks were defined to get knowledge about users' habits and expectations, their opinion about the layout, the design of the pages and the navigation on both websites.

Thanks to the comments of the users during the test and the answers to the questionnaire after it, useful information has been collected.

To summarize, the test sessions have been realised as follows:

- Greeting and explanation of the test to the user
- Calibration of the system
- Realisation of the tasks on the websites
- Answering of the questionnaire

Results

The results of the eye-tracking test and the formulary can be combined, as very often the user repeats in his or her answers what he was telling during the test or confirms what could be seen by the analyst.

- The start-page

Prof. Lindgaard's theory cannot be confirmed or infirmed thanks to these results, but it is interesting to observe some common reactions to almost all the testers.

Mainly, for pages that are longer than what it is possible to see on the screen, users focus to the content "above-the-fold" (the content that can be seen in one full screen without scrolling down), Figure 5.5-2. It is therefore important to keep the major information and/or links of the start-page in this zone.

Like it can be read in many studies, a "banner-blindness" phenomenon (banner-blindness refers to the fact that every format used on the website that looks like it could be an advertisement is ignored by the user) was recognizable in this study.

For example, one of the online-shops was using a banner-shaped zone to pre-

Abb. 5.5-2: *The complete start-page of „Bunte": only the zone with the blue outline is seen on the user's screen without scrolling down*

sent a product carrousel; this one was often totally ignored by the testers. This is of course a usability error that should be corrected very fast, as these products are not being seen by the potential customers.

- The navigation

The testers were finding their way much faster with a traditional horizontal navigation, on the top of the page. Both websites were using this navigation, but presented differently. When the links of this menu were good separated, whether by a limited space or by white space, users could find easily what they were looking for. On one of the websites, the presence of multiple navigations were perturbing the testers who were then brought to the editorial page of the magazine, leaving the online-shop.
Especially for links that have to be easily accessible like the services (in case of a magazine online-shop the address change link for example, task 3 in our test), testers were expecting a clear and separated zone for this link to be contained in. One of the websites was providing it and the link was found very fast, as the other was providing this information at the bottom of the content, which was significantly longer to find, Figure 5.5-3.

- The content page

It was noticeable that text, in an online-shop is seen but not often read. What were attracting more the eyes of the testers were itemizations or images.
It is also interesting to note that on these pages, users tend to scroll down until the bottom of the page, as on the start-page they were only looking at what was presented on the displayed zone. Content pages can thus be longer than one full screen, even in online-shops.

- The formulary page

On the contrary to content pages, testers are reading the text of the formulary pages. This could probably be explained by the fact that users want to know what they pledge themselves to. The stares still focus on the first fields of the formulary.

Results of the questionnaire

Testers were asked to grade the orientation, the designation of the navigation elements, the visual and the readability of the texts of the tested websites, Figure 5.5-4.

The used grading system was the one used at school in Germany, that's to say from 1 to 6, 1 being excellent and 6 very bad.

Moreover, all the testers said that they wished to have clearer websites, to see directly the most important and that they would expect traditional navigation, which they can see on most of the online-shops on the Internet.

Users over 50 also said that they wished to be more guided during the order process and a lot of them would have expected a different sequence of actions. For example, to gift a subscription to a friend, they would have preferred to first fill out the form and then choose the gift. This desire was not shared by younger testers, maybe more used to online-shopping.

Conclusion

The efforts made for a better usability of these websites should thus focus on their aim group, which is mostly over 50. According to Edwin E. Braatz, the group of

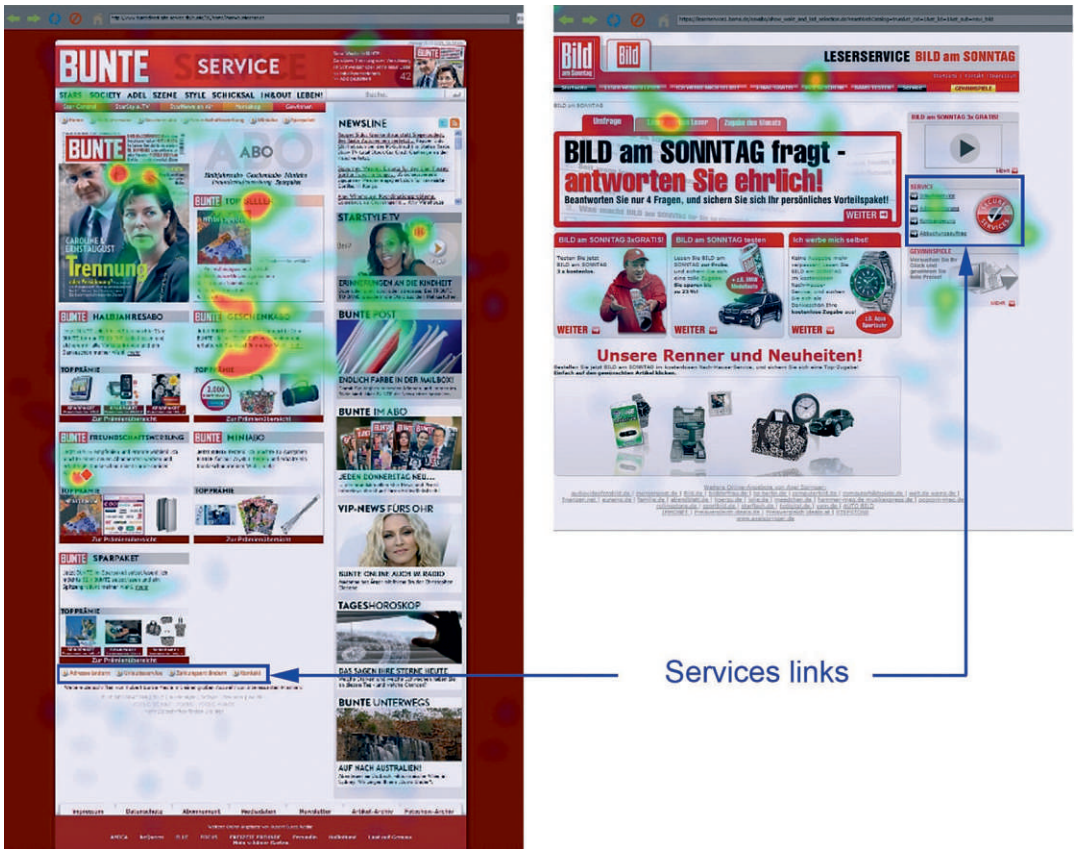

Abb. 5.5-3: *Heat map (the red zones are the most stared at, the green are the less stared at) of the „Bunte" and „Bild online-shop": the servics links are ignored by Bunte and focused by Bild*

surfers over 50 is the fastest growing one. This group represents already 38% of the German population, it is thus not only interesting for our case study, but for all online-shops to apply usability rules for the so called "silver-surfers". [2] These users need more guidance, easier interfaces, references to other websites (placement of navigation), clear and spaced-out design. The start-page should concentrate the important information "above-the-fold" or indicate that the page can be scrolled (an element should be "cut" by the fold to indicate that the page continues, no white space should be on the bottom of the visible zone). The content pages and formularies can be longer, as users tend to scroll automatically.

During the test, some users expressed the doubt that they might have realised faster the tasks on the second website, because they already did it on the first one. It is difficult to prove that it had an influence or not, as usually users already accumulated knowledge on how to perform this kind of tasks on other websites, before the test. It can also be possible that for these users, the navigation or the design of the second website was only easier to understand.

Another assumption is that the test situation could have influenced more or less the results. Even if the material is not at all intruding (no helmet for example), the tester has to stay good positioned on his or her chair and stay focused on the screen, to not influence the quality of the calibration done before. Moreover, even though it was always repeated to the testers that the usability of the websites was tested and not their skills, they tend to get upset about their capabilities and take on themselves the difficulty to complete a task.

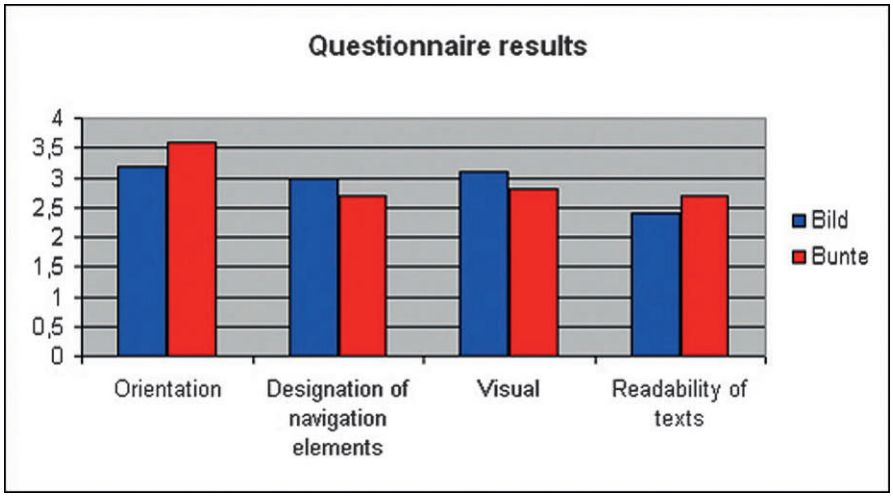

Abb. 5.5-4: *Questionnaire results after eye-tracking test*

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